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Costs Of Producing Beef In Southeastern Ohio, 1954

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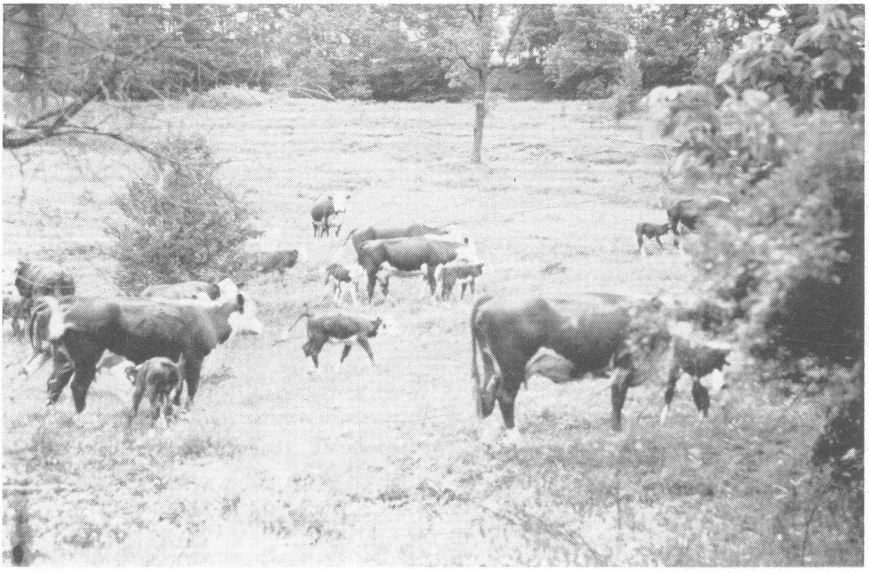

OHIO AGRICULTURAL EXPERIMENT STATION - - WOOSTER, OHIO

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COSTS OF PRODUCING BEEF IN SOUTHEASTERN OHIO, 1954

A Preliminary Report[1]

E. T. SHAUDYS and J. H. SITTERLEY

Ohio's commercial beef enterprise is an important consumer of forage crops, vital for soil conservation on the state's rolling southeastern farms. Two-fifths of the pasture and meadow production, in the area studied, is devoted to beef cattle. Income from the sale of beef ranked third and accounted for 13 percent of gross farm receipts during 1954.

OBJECTIVES

Purpose of this study was to secure up-to-date detailed information on the physical inputs and outputs, dollar costs and returns for different systems of beef production. Information was collected and summarized by size of the beef enterprise, management system and quality of cattle to help farmers, extension agents, researchers and others to determine how the resources available in Southeastern Ohio can be most profitably utilized. The use of this information permits comparison of different systems of producing beef as well as with other livestock enterprises.

HOW THE STUDY WAS MADE

Data were collected by the survey method from a random sample of commercial beef farms in 13 Southeastern Ohio counties (Figure 1). The 131 farms included had a total of 2,787 brood cows. The sample farms were selected from county agents mailing lists of beef producers, stratified by four herd sizes. Cattle numbers as reported in the 1950 Census of Agriculture were used to determine the number of farms selected in each county.

Input factors and production are expressed in physical quantities to permit calculation of costs and returns using different values than reported for 1954.

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[1]This circular will be followed by a more completed and detailed analysis of beef production inputs and returns based on a three visit modified cost route study.

Data were collected and presented for the entire beef herd on a brood cow and hundredweight of beef production basis. All costs of producing beef were considered. Feed costs were computed using the 1954 Ohio price a farmer could have received if home produced feeds had been sold. The prices paid by these farmers during 1954 were used for purchased feeds, supplies and services. Only the value of the labor

Fig. 1.—Location of 131 commercial beef farms, southeastern Ohio, 1954.

used to handle the beef animals was charged to the beef enterprise. Annual building and equipment costs were computed using depreciated replacement values.

Returns to the farmers included receipts from sale of beef animals, the estimated value of inventory increases, slaughters and milk used in the home or sold. Manure was credited to the beef herd at the 1954 fertilizer nutrient value less the removal and spreading expenses.

Prices and methods used for determining costs and credits are considered in another section of this publication.

A change in farm production input costs or in the prices received for beef will alter the profitability of commercial beef production. The costs as shown in this bulletin do not necessarily represent the costs which must be met to permit a farmer to profitably continue producing beef. Periods of higher and lower costs and returns do occur. There are times when other opportunities to use resources available may justify production of beef at costs which average more than the price received. During other periods alternative opportunities to use resources are such that the price received for beef is higher than production costs.

The costs as reported, in this study, are those costs a farmer starting production during 1954 would have to meet in the long run if his input-output relationships remained unchanged. Individual farmers already in production have different input-output relationships. Each farmer has a different break-even point for his beef enterprise depending on the time he started producing, the availability and the costs of the resources used.

All of the costs of producing beef as reported in this bulletin do not have to be met each and every year. However, over the life of the resources employed all production costs must be covered for a farmer to continue producing beef.

WHAT IT COSTS TO PRODUCE BEEF

The average cost of producing beef on the 131 Southeastern Ohio farms during 1954 was $29.33 per 100 pounds. Returns averaged $22.16 for each 100 pounds produced: $15.62 from sales, $3.51 for manure credit, $1.81 for increase in inventory, 79 cents for home slaughter and 43 cents for milk used in the home or sold. In 1954 these farms lost an average of $7.17 on each hundredweight of beef produced when the value of all inputs and returns were considered.

The average herd cost per brood cow kept was $182.82 and the return was $138.06 resulting in a loss of $44.76 (Table 1).

Feed consumed by the beef herd accounted for 72 percent of the production cost. Hay, silage and pasture consumed represented two-thirds of the feed cost and more than one-half of the total cost of producing beef. However, the price received for hay in Ohio during 1954 was higher than any other time in the last ten years. Approximately two and one-half tons of hay and one ton of silage were fed to the beef herd per cow or 820 pounds of hay and 344 pounds of silage for each 100 pounds of beef produced.

In addition, 249 cow days of pasture were used per cow or an average of 40 cow days for each 100 pounds of beef produced.[2] The cattle on these 131 farms were pastured more than eight months, but supplementary feed was provided during two months of the period. On these farms 1,288 pounds of ground feed and supplement valued at $29.30 were consumed by the herd per cow or 207 pounds valued at $4.70 were consumed per 100 pounds of beef produced.

The 701 pounds of bedding when supplemented with uneaten hay and fodder were considered adequate. Man labor used to care for the beef cattle averaged 28 hours per cow or 4.5 hours per 100 pounds of beef produced. Labor charged at 70 cents per hour was worth $19.68 per cow or $3.16 per hundredweight of beef produced. Labor represented 11 percent of the total production cost.

Housing costs were computed for the part of the buildings used to stable the beef animals. The building space used by the beef herds averaged 121 square feet per brood cow or 20 square feet for each 100 pounds produced in 1954. Types of shelter varied on the farms studied from a windbreak provided only during the most severe weather to tight barns used during the entire winter season.

RETURNS FROM THE BEEF ENTERPRISE

During 1954 these 131 beef producers sold an average of 17 animals per farm. Seven head were sold as feeder calves, 6.6 were older and heavier animals, 2.0 were cull cows, 0.8 were calves and 0.6 were bulls. An average of 541 pounds of beef were sold for each brood cow kept which returned to the producer $97.31. An average of 87 pounds of beef were sold at $18.00 per hundredweight for each 100 pounds of beef produced. The remaining 13 pounds were included as

[2]A cow day is the amount of pasture one average cow will consume in one day.

increased inventory or slaughtered for home use. Sale of beef animals one to two years of age, accounted for 52 percent of the income, feeder calves 31 percent, cull cows 10 percent, bulls 5 percent and veal calves 2 percent.

Sixteen tons of manure were produced by the beef herd per brood cow. Manure was valued at $1.40 per ton or the farm value of the nutrients less removal and spreading expenses. Manure credits aver-

TABLE 1.—Average Cost of Producing Beef on 131 Southeastern Ohio Farms, 1954*

Item	Cow basis*		100 pounds of beef produced		Percent of total value
	Amount	Value	Amount	Value	
Hay	5106 lbs.	$ 71.50	820 lbs.	$11.47	39
Ground feed	1288 lbs.	29.30	207 lbs.	4.70	16
Pasture	249 days	16.63	40 days	2.67	9
Silage	2145 lbs.	11.41	344 lbs.	1.83	6
Bedding	701 lbs.	3.38	113 lbs.	.54	2
Fodder	156 lbs.	.62	25 lbs.	.10	—
Total feed and bedding		$132.84		$21.31	72
Labor	28 hrs.	$ 19.68	4.5 hrs.	$ 3.16	11
Interest		12.19		1.96	7
Use of buildings	121 sq. ft.	$ 5.78	20 sq. ft.	.93	3
Tax and insurance		3.29		.53	2
Marketing		3.22		.52	2
Grinding		1.96		.31	1
Veterinary		1.27		.20	1
Miscellaneous		2.59		.41	1
Total cost		$182.82		$29.33	100
Sales	541 lbs.	$ 97.31	87 lbs.	$15.62	70
Manure	16 tons	21.85	2.6 tons	3.51	16
Inventory change	56 lbs.	11.29	9 lbs.	1.81	8
Slaughter	26 lbs.	4.91	4 lbs.	.79	4
Milk	104 lbs.	2.70	17 lbs.	.43	2
Total returns		$138.06		$22.16	100
Net loss		$ 44.76		$ 7.17	

*Total beef herd inputs divided by number of cows and bred heifers.

aged $21.85 per brood cow and accounted for 16 percent of the gross return. During 1954 the beef inventories were increased 56 pounds for each brood cow in these 131 herds. Seven out of every ten of the 131 farmers butchered a beef animal for home use. The animals slaughtered averaged 762 pounds live weight worth $145.39 when valued by the farmers at $19.08 per hundredweight. Home slaughter averaged 548 pounds valued at $104.59 per farm.

Two-thirds of the animals killed were heavy steers and heifers, one-fifth were feeder calves and the remainder were cows, veal calves or bulls.

TABLE 2.—Sales of Beef Animals by Class, 131 Farms, Southeastern Ohio, 1954

Class	Number sold per farm	Average weight per animal	Pounds sold per cow	Average price received per 100#	Value per cow	Percent of sale value
Cows and bred heifers	2.0	978	92	$10.91	$10.02	10
Steers 1 to 2 years	5.2	808	197	20.39	40.23	41
Steers over 2 years	.4	1129	21	18.33	3.83	4
Heifers 1 to 2 years	1.0	835	39	18.21	7.14	7
Calves 6 months to 1 year	7.0	474	156	19.37	30.18	31
Calves under 6 months	.8	213	8	18.36	1.47	2
Bulls	.6	918	28	16.09	4.44	5
Average	17.0	677	541	$18.00	$97.31	100

Approximately one-fourth of the 131 farmers milked one or more of the cows kept for beef all or part of the year. The milk used in the home or sold was valued at $2.70 for each brood cow kept in the beef herds.

These 131 farms realized a net loss of $7.17 for each hundredweight of beef produced or an average loss of $44.76 per cow kept when all costs and returns were considered.

LAND RESOURCES AND USE

The 131 farms contained an average of 269 acres and ranged in size from 36 to 942 acres. About one-third of the farm area was used for crops, approximately one-half was pastured with the remainder devoted to farmstead, woods and waste. The average farm operator

owned 238 acres and rented 31 acres of the 269 acres operated. A higher proportion of the rented land was cropped than of the owned and a smaller proportion was pastured or was used for other purposes.

A four-year rotation of corn, small grain and two years of meadow was followed on most of the 131 farms. Over one-half of the meadow acreage was in alfalfa or mixtures containing alfalfa.

Over one-third of the permanent pasture had received some treatment. Pasture treatment included clipping, lime and fertilizer. However, some permanent pasture, reported as improved, had received no treatment other than clipping. One-half of the permanent pasture area was open but untreated and one acre of every six was classed as woods pasture. Very little of the crop land was used for pasture except as aftermath, indicating the need for winter feed production.

Rented land was used by the farm operators to enlarge the size of the owned farm units and was farmed more intensively than the owned tracts. This intensive use pattern on rented land was followed to minimize transportation costs and the problems involved in caring for livestock away from the home unit.

TABLE 3.—Land Resources and Utilization on 131 Southeastern Ohio Beef Farms, 1954

	Acres			Percent
	Owned	Rented	Total	
CROPLAND				
Corn	13.0	5.8	18.8	7
Wheat	7.7	1.9	9.6	4
Oats	5.1	.3	5.4	2
Barley	1.3	.3	1.6	1
Silage	2.3	.2	2.5	1
Other	1.0	—	1.0	0
Alfalfa hay	17.3	1.9	19.2	7
Other hay	11.6	2.2	13.8	5
Rotation pasture	4.1	—	4.1	2
Idle or rented out	5.2	.8	6.0	2
Total	68.6	13.4	82.0	31
PERMANENT PASTURE				
Treated	42.8	.5	43.3	16
Untreated	59.6	13.3	72.9	27
Woods	22.7	.7	23.4	9
Total	125.1	14.5	139.6	52
Farmstead, woods not pastured and waste	43.7	3.3	47.0	17
Total land in farms	237.4	31.2	268.6	100

LIVESTOCK ON FARMS

The beginning inventory of all livestock on these farms was taken as of January 1, 1954. The 131 farms averaged 40.2 animal units[3] of which 31.4 were beef. Brood cows comprised two-thirds of the beef units. Calves six months to one year accounted for one beef unit out of every seven and animals one to two years accounted for one unit of every ten. Dairy, sheep, swine, horses and mules made up the other fourth of the livestock units.

The average farm had 21.3 beef cows and bred heifers as of January 1954, 10.3 calves six months to one year, 5.0 fat animals one year and over, 2.3 calves under six months and 1.2 bulls. These farms averaged 71.5 head of all livestock, 40.1 beef animals, 24.8 sheep, 3.8 dairy animals, 1.9 swine and 0.9 horses and mules.

[3]An animal unit equals 1000 pounds of livestock.

TABLE 4.—Numbers and Animal Units of Beef and Other Livestock on 131 Southeastern Ohio Farms, January, 1954

Livestock	Number	Animal units*
BEEF		
Cows and bred heifers	21.3	21.3
Steers over two years	.1	.1
Steers one to two years	2.5	1.7
Heifers one to two years	2.4	1.6
Calves six months to one year	10.3	4.7
Calves under six months	2.3	1.0
Bulls	1.2	1.0
Total	40.1	31.4
Dairy†	3.8	3.5
Sheep†	24.8	4.0
Swine†	1.9	.4
Horses and mules	.9	.9
Total	31.4	8.8
TOTAL ALL LIVESTOCK	71.5	40.2

*1000 pounds of livestock.
†All classes.

Fig. 2.—Good quality cattle increased returns from hilly pastures.

SIZE OF THE BEEF ENTERPRISE

The beef cow herds on these 131 farms were classified into four size groups according to the number of brood cows and bred heifers in the herd as of January 1, 1954. The four groups were five to nine cows, 10 to 18 cows, 19 to 29 cows and 30 to 60 cows.

Variations in the costs and returns realized in each 100 pounds of beef produced were small among the four herd size groups during 1954.

Labor used per cow had the greatest variation among the four herd sizes for any of the production inputs. Hours of labor used dropped from 49 hours per cow on farms with five to nine cows to 23 hours per cow for herds with 30 to 60 cows. Feed cost varied somewhat among the four herd size groups but the effect of herd size on this input could not be accurately determined. Considerable variation in type of feeds fed was evidenced. Farmers with small herds of five to nine cows fed the smallest amount of concentrate feed and the largest quantity of forage per brood cow kept. Farmers with 10 to 18 cows fed more concentrated feed than those in the other three groups but used about the same quantity of forage and pasture per animal.

Herds with 5 to 9 cows and 10 to 18 cows realized losses of $8.91 and $8.67 respectively for each hundredweight of beef produced. The smallest net loss of $5.30 per hundredweight of beef production was experienced by farmers having herds in the 19 to 29 brood cow group. Better management and higher levels of overall efficiency as evidenced by lower feed inputs and a higher percent calf crop were largely responsible for the smaller loss.

The 30 farms with 30 to 60 brood cows had the smallest input of labor but used slightly more feed per cow than herds of 19 to 29 cows. A loss of $7.20 per hundredweight of beef produced was realized on herds of this size. A smaller percent of calf crop, 92.0 as compared to 94.8, was an important factor contributing to a greater loss per 100 pounds of beef produced. The cost of feeding and caring for the cows which did not calve was an important cause for this higher production cost. Most Southeastern Ohio farms have buildings and other facilities adequate to care for 25 to 30 brood cows. Cattle in the larger herds (30 to 60 cows) were usually located at two or more centers of operation. The increased problem of caring for those animals housed some distance from the main farmstead may have resulted in greater dollar loss for some large size herds.

From observation, some of the farmers with 30 to 60 brood cows, were less experienced in operating herds of this size than those in other

TABLE 5.—Size of Herd and Selected Factors Affecting the Cost of Producing Beef, Southeastern Ohio, 1954

Size of herd (cows)	Number of farms	Cows per farm	Average per Cow*					Average per 100 pounds of beef produced	
			Ground feed (lbs.)	Hay† (lbs.)	Pasture (days)	Labor (hrs.)	Beef produced (lbs.)	Cost	Return
5– 9	28	7.0	610	6326	289	49	639	$29.80	$20.89
10–18	42	14.7	1588	6389	256	29	664	30.25	21.58
19–29	31	23.7	1147	5742	244	30	636	28.02	22.72
30–60	30	41.3	1327	5856	242	23	593	29.53	22.33
Average	131	21.3	1288	5977	249	28	623	29.33	22.16

*Total herd input divided by the number of cows.

†Includes silage converted to hay, 3 pounds of silage equals 1 pound of hay.

groups. Greater efficiency and lower production costs may be realized by these operators as more experience is gained.

Hours of labor decreased significantly per cow as the size of herd increased, and other inputs varied slightly. Less labor was used per cow or per 100 pounds of beef produced as the size of herd increased. However, labor accounted for only 11 percent of the total production cost.

Approximately the same number of animal units of other livestock as of beef were kept on the 28 farms having smaller beef cow herds. The proportion of other livestock decreased as the size of beef herds increased. On farms with 30 to 60 brood cows beef comprised 90 percent of the total animal units of all livestock.

TABLE 6.—Livestock, Size of Farm and Production of Beef by Size of Herd, Southeastern Ohio, 1954

Size of herd (cows)	Animal Units*			Percent of calf crop	Crop and Pasture		Acres per farm	Percent cropland
	Beef	Other	Total		Acres per beef unit†	Pounds of beef per acre		
5– 9	10.2	11.0	21.2	92.5	5.2	84	152	25
10–18	22.4	9.1	31.5	92.5	5.7	76	213	35
19–29	35.1	7.9	43.0	94.8	5.6	78	288	30
30–60	59.7	7.3	67.0	92.0	5.4	68	436	30
Average	31.4	8.8	40.2	92.9	5.5	77	269	31

*1000 pounds of livestock.

†1000 pounds of beef.

Size of the beef herds was closely related to the size of farms. However, some differences existed among the four size groups in the proportion of the farm used for crops. Only 25 percent of the total farm area was cropped on farms with five to nine cows as contrasted to 35 percent on farms with 10 to 18 brood cows. Both of the other groups cropped 30 percent of the total farm area in 1954.

Five and one-half acres of crop and pasture area were utilized to carry one beef unit of livestock on these 131 farms. There was very little correlation between size of herd and the amount of crop and pasture area used to carry a beef unit. However, the production of

beef per acre was highest (84 pounds) on farms with small herds and lowest (68 pounds) on farms with the largest herds, even though some of these producers fed less concentrate per cow.

SYSTEMS OF HANDLING BEEF

Three systems of managing the calf crop were used on these 131 Southeastern Ohio farms. Forty-six of these producers sold their calf crops at weaning age as feeder calves. The operators of 43 farms fed their calves after weaning to heavier weights before selling them. On the remaining 42 farms part of the calf crop was fed to heavier weights with the rest of the calves sold as feeder calves at weaning.

Land resources available, inputs of feed and labor and production per cow differed greatly among the three management systems followed. Consumption of concentrate, forage and pasture was lowest on farms selling feeder calves at weaning and highest when the calves were kept longer and fed to heavier weights. Production of beef was lowest 479 pounds per cow when feeder calves were sold and highest 755 pounds per cow on farms selling the calf crop at heavier weights. Farmers selling calves both as feeders and at heavier weights produced 611 pounds per brood cow kept during 1954. Only 24 hours of labor per cow were

Fig. 3.—Many beef herds grazed on unimproved permanent pastures.

TABLE 7.—System of Handling Beef and Selected Factors Affecting the Cost of Producing Beef, Southeastern Ohio, 1954

System	Number of farms	Cows per farm	Average per Cow*					Average per 100 pounds of beef produced	
			Ground feed (lbs.)	Hay† (lbs.)	Pasture (days)	Labor (hrs.)	Beef produced (lbs.)	Cost	Return
Feeder calves	46	18.5	406	5428	212	24	479	$29.62	$21.57
Cattle 1-2 yrs.	43	23.8	2236	6572	287	32	755	29.50	22.60
Feeder calves and cattle 1-2 yrs.	42	20.9	1053	6551	235	28	611	28.79	22.04
Average	131	21.3	1288	5977	249	28	623	$29.33	$22.16

*Total herd input divided by the number of cows.

†Includes silage converted to hay, 3 pounds of silage equals 1 pound of hay.

used on the farms selling feeder calves as compared to 32 hours per cow on farms selling heavier cattle and 28 hours per cow when calves were sold both ways.

Herds from which older and heavier calves were sold averaged 5.3 more cows than herds from which feeder calves were sold and 2.9 more cows than herds from which both feeder calves and heavier cattle were sold.

During 1954 little variation was evidenced in production costs, returns and losses among the three systems of management. Costs per 100 pounds of beef produced in 1954, ranged from $29.62 on farms selling feeder calves to $28.79 when part of the calf crop was sold as feeder calves at weaning time and part were fed to heavier weights and sold. The lowest average gross return of $21.57 per hundredweight was realized on farms selling feeder calves and the highest average gross of $22.60 was realized by producers marketing most of their calves at heavier weights. Beef producers selling some of their calves as feeders and selling the rest at heavier weights realized the smallest loss $6.75 per 100 pounds of beef produced. Feeder calf producers had the highest average loss $8.05 per hundredweight while farmers carrying calves to heavier weight lost $6.90 per hundredweight of beef produced.

The farmers that held their calves for feeding to heavier weights had more animal units of beef, operated larger farms and had more cropland, than farmers selling feeder calves or farmers selling both feeder calves and heavier cattle. Farmers selling feeder calves had the

TABLE 8.—Livestock, Size of Farm and Efficiency by System of Management, Southeastern Ohio, 1954

System	Animal Units*			Percent of calf crop	Crops and Pasture		Average per Farm	
	Beef	Other	Total		Acres per beef unit†	Lbs. of beef per acre	Acres per farm	Percent of crop land
Feeder calves	23.4	8.1	31.5	91.0	5.9	64	221	27
Cattle 1-2 years	40.3	7.2	47.5	93.8	5.3	84	312	35
Feeder calves & cattle 1-2 yrs.	30.9	11.2	42.1	93.7	5.4	79	276	29
Average	31.4	8.8	40.2	92.9	5.5	77	269	31

*1000 pounds of livestock.
†1000 pounds of beef.

smallest number of animal units of beef and other livestock. These farms averaged 221 acres with 27 percent cropland as compared to 312 acres with 35 percent cropland when the calves were sold at heavier weights and 276 acres with 29 percent cropland when the calves were sold both as feeders and at heavier weights.

Production of beef per acre of crop and pasture land increased with the age and weight of calves at market time. Farmers selling calves as feeders produced 64 pounds per acre, compared with 84 pounds per acre on farms, which held and sold their calves at heavier weights.

Farmers selling animals at heavier weights produced more beef per acre, sold more labor and spread their overhead costs over more pounds of beef. However these men incured more risk of price decline and mortality.

QUALITY OF THE BEEF ENTERPRISE

Beef animals in all of the 131 herds were placed in three quality groups. The beef animals on 49 farms were classed good quality, on 66 farms, fair quality; and on 16 farms, poor quality.

Some of the differences found in the cost of production and returns realized by the producers in the three groups could be attributed to size of herd, hours of labor used, percent of calf crop and in the pounds of beef produced per cow. Little variation existed in the type or

TABLE 9.—Quality of Cattle and Selected Factors Affecting the Cost of Producing Beef, Southeastern Ohio, 1954

Quality	Number of farms	Cows per farm	Average per Cow*					Average per 100 pounds of beef produced	
			Ground feed (lbs.)	Hay† (lbs.)	Pasture (days)	Labor (hrs.)	Beef produced (lbs.)	Cost	Return
Good	49	23.6	1361	6207	253	26	664	$28.22	$22.95
Fair	66	21.3	1204	5651	238	28	593	29.60	21.78
Poor	16	14.3	1337	6812	299	43	607	33.87	21.65
Average	131	21.3	1288	5977	249	28	623	$29.33	$22.16

*Total herd input divided by the number of cows.

†Includes silage converted to hay, 3 pounds of silage equals 1 pound of hay.

quantities of feeds fed. Slightly less feed was fed per brood cow kept in the fair quality herd than in herds with either good or poor quality cattle.

Labor used per cow varied from 26 hours for herds classed as good quality to 43 hours for poor quality herds. Better management is further evidenced on the good quality herds by the 94.7 percent calf crop as contrasted to 92.4 percent for the 16 poor quality herds and 91.4 for herds classed as fair quality.

Costs of producing beef in 1954 were lowest $28.22 and return highest $22.95 per hundredweight on the farms with good quality cattle. Poor quality herds averaged the highest cost $33.87 and the lowest return $21.65 for each 100 pounds of beef produced. Farms with fair quality beef cattle were found to fall between the good and poor quality herds with respect to cost and returns from beef production. Farms with good quality cattle averaged a net loss of $5.27 per hundredweight of beef produced, whereas the loss on farms with fair quality cattle was $7.82 and on farms with poor quality cattle realized an average loss of $12.22 per 100 pounds of beef produced.

The farm operators with fair quality cattle raised fewer calves for each 100 cows.

The farms with good quality cattle had more livestock and more beef than either of the groups with fair or poor quality animals.

A consistant relationship was observed between quality, the number animal units of beef carried, size of farm, percent of cropland and

production of beef per acre. Herds with good quality cattle averaged 11.2 more beef units of livestock than poor quality herds and 2.3 more than on farms with fair quality cattle. Farms with good quality cattle average 290 acres with 32 percent cropland as compared with farms with fair quality cattle which average 258 acres with 30 percent in crops and with farms with poor quality cattle which averaged 248 acres with 28 percent in cropland.

TABLE 10.—Livestock, Size of Farm and Production of Beef by Quality of Cattle, Southeastern Ohio, 1954

Quality	Animal Units*			Percent of calf crop	Crop and Pasture		Acres per farm	Percent cropland
	Beef	Other	Total		Acres per beef unit†	Pounds of beef per acre		
Good	33.9	8.8	42.7	94.7	5.7	81	290	32
Fair	31.6	9.6	41.2	91.4	5.1	79	258	30
Poor	22.7	5.9	28.6	92.4	5.7	67	248	28
Average	31.4	8.8	40.2	92.9	5.5	77	269	31

*1000 pounds of livestock.
†1000 pounds of beef.

Production of beef per acre of crops and pasture ranged from 81 pounds in the good quality herds to 67 pounds when poor quality cattle were kept. The 66 farms with fair quality cattle averaged 79 pounds of beef production per acre of crop and pasture land used.

Quality of the beef cattle among the three groups was closely associated with management and the other resources available for production.

SUMMARY

The cost of producing beef on 131 Southeastern Ohio commercial beef farms was found to be $29.33 per hundredweight during 1954. Returns from sales, slaughters, manure credits, inventory change, and milk were found to be $22.16 per 100 pounds of beef produced.

These commercial beef producers lost an average of $7.17 per 100 pounds or $44.76 per brood cow kept when all costs were considered. Some individual farm operators produced beef at a lower cost and received a net profit, others realized a greater than average loss.

The average herd of 21.3 brood cows produced 623 pounds of beef per cow of which 567 pounds were sold or slaughtered. The herd inventories were increased 56 pounds per brood cow kept during 1954.

The value of feed consumed by the herd made up 72 percent of the total average production cost. The feed used to produce 100 pounds of beef averaged 207 pounds of grain, 820 pounds of hay, 344 pounds of silage, 25 pounds of fodder, 40 days of pasture and 113 pounds of bedding. Labor used to produce 100 pounds of beef averaged 4.5 hours or 28 hours per cow. Labor accounted for 11 percent of the total cost and other costs made up 17 percent of the total production cost.

Size of the beef enterprise had very little effect on the average cost of producing 100 pounds of beef. The 131 farms were classified into four groups according to the number of brood cows. The four groups were 5 to 9 cows, 10 to 18 cows, 19 to 29 cows and 30 to 60 cows. Inputs of labor decreased as herd size increased, but the value of other inputs increased as the number of brood cows was increased.

Some significant variations were evident among the three management systems (1) sale of calves at weaning as feeder calves, (2) holding

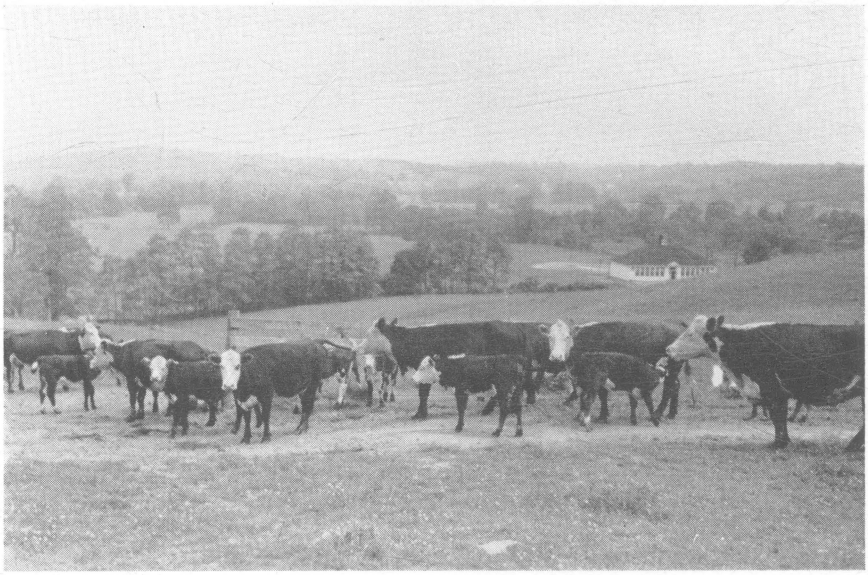

Fig. 4.—Large acreages of unimproved pastures were needed to carry a cow and calf.

calves after weaning and selling at heavier weights and (3) selling part of the calf crops as feeder calves and holding some for sale at heavier weights. Inputs of feed and labor per cow increased as the calves were held longer and fed to heavier weights. However costs and returns per hundredweight of beef produced were similar in all three systems.

Cattle quality significantly affected both the production efficiency and returns from beef production. Efficiency in the use of inputs and returns realized per 100 pounds of beef produced increased as quality of cattle was improved.

The costs of production as shown in this study do not necessarily represent those costs which must be returned to the farmer to enable him to remain in commercial beef production. There are periods of alternately higher and lower beef production costs and returns. There are times when other opportunities to use available farm resources justify production of beef at costs which average more than the price received. During other periods alternative opportunities to use farm resources are such that the price received for beef is higher than production cost.

Fig. 5.—Beef provided a market for forage produced on rough and brushy land.

METHODS USED TO COMPUTE COSTS

Feed and Bedding. Quantities of feeds consumed by the beef herd were determined by two approaches. Daily quantities of feed fed to the beef cattle were obtained from each farmer and totaled for the year. The total quantity fed to beef cattle was checked against the difference between the feed produced and purchased and the amount sold or fed to other types of livestock.

Home produced feeds were charged at the price the farmer could have received at the farm. Winter and summer prices were used for most feeds. Purchased feeds were charged at the price paid by the farmer. The prices used in calculating the 1954 costs were: corn $1.47 per bushel, oats 76 cents per bushel, barley $1.10 per bushel, alfalfa hay $30.10 per ton, mixed hay $25.50 per ton, corn silage $11.50 per ton, grass silage $10.00 per ton, straw $9.25 per ton, fodder $8.00 per ton and beef supplement $5.08 per hundredweight. Feed grinding was charged at 15 cents per hundredweight.

The charge for pasture was determined from the animal unit grazing days required by the herd for adequate feed. An animal unit grazing day was valued at 6.7 cents.

Labor. The rate charged per hour included the wage paid, house rent, and the value of such consideration as meat, milk, eggs and fuel that a good full-time hired man could have received. This amounted to 70 cents per hour. The labor charge included the time required to care for the beef enterprise such as feeding, feed preparation, cleaning and bedding, doctoring, sorting, marketing, moving, salting, checking on pasture, castrating, dehorning, and vaccination.

Contributions of the operators' family were converted to man hour equivalents. Hours spent by women and children were reduced to the time it would have taken a man to do the job.

Buildings. The square feet of building space used by the beef animals was obtained from the farm operators. Annual building costs per square foot were calculated by determining the cost of constructing a pole type barn of equal or greater utility and graduated by size. Annual building costs included were depreciation, taxes, insurance, interest and repairs. Only the area used directly by the beef animals was charged to the beef enterprise.

Other Costs. Interest was charged at five percent on the beginning inventory value of the herd. Actual reported costs were used for veterinary, salt and minerals, breeding fees, dues and marketing expenses. The equipment charge consisted of depreciation, repairs and interest. Insurance and taxes were charged on the beginning inventory value of beef animals. Taxes were charged at individual personal tax rates and insurance at 35 cents per $100 valuation.

CREDITS

Manure produced by the beef herd was credited at $1.40 per ton net.

Milk produced by animals used for beef either for sale or home use was credited at the value received for the milk actually sold on these farms.